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mountain, a warm saturated air is continually rushing up the side of the mountain, and the temperature must necessarily rise as long as the rain is formed.

I have projected in curves all the temperature observations at Pike's Peak for the hundred and thirty-six months during which at least .75 of an inch of rain fell. There were thirty-eight months, in all, in each of which less than that amount fell. A very slight diurnal range was eliminated in the manner already indicated many times. Then the precipitation for each eight hours was placed upon the curve of temperature, and the condition of the temperature and precipitation was taken out under three heads,—first with rising, second with stationary, third with falling, temperature. The results for each month are given in the following table:—

*Pike's Peak Precipitation and Temperature.*

	TEMPERATURE.					
	Rising.		Stationary.		Falling.	
	Total Inches.	Per Cent.	Total Inches.	Per Cent.	Total Inches.	Per Cent.
January.....	3.38	16	4.05	20	13.40	64
February.....	3.22	17	4.92	27	10.27	56
March.....	5.34	17	6.17	20	19.31	63
April.....	13.84	25	16.17	29	26.13	46
May.....	14.68	27	20.11	37	19.98	36
June.....	7.11	27	6.53	25	12.66	48
July.....	17.48	28	16.05	26	28.49	46
August.....	10.38	19	15.32	28	29.19	53
September.....	4.48	20	5.37	24	12.69	56
October.....	4.41	24	4.63	26	9.09	50
November.....	4.29	17	6.88	27	14.34	56
December.....	3.09	17	3.11	17	12.26	66
Year.....	91.60	22	109.31	27	207.81	51

No one can be more surprised than the present writer at this extraordinary result, so contrary to all preconceived theories. We find that on the average more than half the rain occurs with a falling temperature. It seems probable, however, that in general the rain is independent of the temperature. While it might be thought that a falling temperature in a saturated air would tend to produce precipitation, yet such is by no means the fact. There are many cases in which a fall of from ten to fifteen degrees Fahrenheit has occurred in a saturated air without any corresponding rainfall. Whatever may be thought of these facts, there is one point that is certainly made perfectly clear in this discussion, and that is that the temperature in a column of air in which rain is falling is not *higher* than that of the surrounding region.

It is probable that some will think there is a contradiction between the results here presented and those given several times before, especially in this journal for Sept. 5, 1890, but I think this is only a seeming contradiction. While the great bulk of the rain in the eastern part of the country occurs with a rising temperature at the earth's surface, yet I have shown, that, during the passage of storms and high areas, the temperature in the upper air changes several hours earlier than at the earth (in the case of Mount Washington five to ten hours earlier); so that there may easily be a falling temperature where the rain is formed. Several months of observations at Mount Washington have shown practically the same result as at Pike's Peak.

For several years I have contended that there is absolutely no proof of an ascending current in the centre of our storms, or even where rain is falling. It seems as though the present discussion must be regarded as a culminating point, and a perfectly satisfactory disproof of such ascending current.

H. A. HAZEN.

Washington, Jan. 26.

## BOOK-REVIEWS.

*Socialism New and Old.* By WILLIAM GRAHAM. (International Scientific Series.) New York, Appleton. 12°.

THIS is an interesting work. It is written in a more attractive style than that of most economic treatises, and bears the marks of study and thought as well as of a philanthropic spirit. It opens with a statement of what socialism is, its various forms being recognized and defined, with special attention to what is now the leading form of it, that known as collectivism, or nationalism, according to which the State is to be the owner of all the instruments of production, while private property in other things is to remain undisturbed. The author then sketches the history of socialism with special reference to the evolution of the contemporary forms of it, and showing the various contributions of Rousseau, St. Simon, Marx, and others to the doctrine as it is to-day. He then goes into an elaborate discussion and criticism of the proposed socialistic or collectivist state, pointing out the respects in which it would be sure to fail, as well as others in which its success would be very doubtful. The main objection he makes, and one that he rightly deems insurmountable, is the impossibility of determining the relative rates of wages of the different classes of workers in the socialistic state. He has no difficulty in showing that equality of payment would be impracticable, since the more skilful workmen and the abler managers could not be induced to put forth their best efforts except for relatively higher pay; while, on the other hand, there is no possible way to determine how much higher the pay ought in justice to be. Other objections, such as the impossibility of applying the collectivist scheme to foreign trade, the lack of personal liberty under a socialistic *regime*, and the difficulty of providing for intellectual workers, are also emphasized; and the conclusion is that the attempt to introduce the system "would bring chaos, and 'confusion worse confounded,' until human nature rose in revolt against the impossible thing."

But while Mr. Graham is no collectivist, he maintains that the condition of the laboring classes can be bettered, and ought to be bettered, and that the State ought to do it; yet he seems at a loss with regard to the means. He has some chapters on "practicable socialism," in which he advocates several measures of a more or less socialistic character, such as State loans to co-operative societies, allotments of land to laborers, and purchase of city lands by the municipalities, all more or less objectionable, and, as it seems to us, promising but little real benefit to the poor. Mr. Graham, in short, is more successful as a critic of socialism than as a constructive social reformer; the most useful suggestion he makes being that of giving all classes the means of getting a good education in order to equalize opportunities,—a suggestion, however that is not new. In his last chapter he discusses the supposed present tendency toward socialism, expressing the opinion that such tendency is overrated, and that counter tendencies are at work which will nullify the socialistic movement. Altogether, Mr. Graham has given us a useful discussion, and one that deserves to be read by all who are interested in the subject.

## AMONG THE PUBLISHERS.

HENRY HOLT & Co. have just ready "Told After Supper," a series of brief burlesque ghost-stories by Jerome K. Jerome. Although represented as told in good faith by their narrators, the reader is sometimes let into a hint of realistic explanation which gives the touch of good-natured satire characteristic of the author.

—Benjamin R. Tucker, Boston, has just ready "Church and State," a new volume of essays on social problems, by Count Leo Tolstói, translated directly from Tolstói's manuscript. It was written several years ago, but has thus far been kept in manuscript.

—Roberts Brothers will publish Feb. 10 the following: "Petrarch, his Life and Works," by May Alden Ward (author of a similar work on Dante), a clear and well-written sketch, in which the subject is considered as the precursor of the Renaissance, and as one of the great triumvirate that created the Italian language and inaugurated its literature; and a volume entitled "Power through

Repose," by Annie Payson Call, who treats of such subjects as training for rest, rest in sleep, the body's guidance, training of the mind, etc.

— Macmillan & Co. announce an edition of Lock's well-known "Arithmetic," revised and adapted for the use of American schools by Professor C. A. Scott of Bryn Mawr College, Pennsylvania.

— The Stefanite aluminum process aims at introducing aluminum into iron, either in the blast-furnace, the cupola, or the puddling-furnace. During the process of manufacture, the liberation of the aluminum from its ores goes on concurrently with the manufacture or melting of the iron, the newly formed metal being instantly alloyed with the iron. It is well known that a minute percentage of aluminum has the effect of lowering the melting-point of iron and steel, rendering it extremely fluid, so that it can be run with great facility without blow-holes. The cost of the process has hitherto rendered its adoption very slow, in spite of the great economies which have been effected by the various electric and electrolytic processes for the production of aluminum. It is with the intention of reducing this cost that the Stefanite process is being introduced. It is not in actual operation in this country, the trials which have already been made having been conducted in Germany. As communicated to *Engineering*, the method of operation consists in the addition to the iron ore in the blast-furnace, or to the pig in the cupola, of emery and alum, either in powder or made up into briquettes. It is stated that the re-action of the alum on the emery gives rise to vapors of metallic aluminum, which instantly alloy themselves with the iron, imparting to it the improved qualities which have hitherto been gained by the addition of aluminum or ferro-aluminum in the ladle or the crucible. The subsequent blowing does not volatilize the aluminum which descends with the iron. When the materials are added in the puddling-furnace, the bars, we are informed, can be hardened and tem-

pered like steel, while their tensile strength is increased. The invention is in the hands of Mr. Thompson Freeman, of 2 Victoria Mansions, Westminster, London, England.

— "Nature's Wonder Workers" is the title of some short life-histories in the insect world, by Kate R. Lovell, which the Cassell Publishing Company have ready. In this book the author's aim is to interest the reader in what are called the "useless insects."

— "Supposed Tendencies to Socialism" is the title of the article that will open the March *Popular Science Monthly*. It is by Professor William Graham of Belfast, who gives his reasons for expecting a progressive improvement in the state of society, but no sudden social transformation. "Iron-Working with Machine-Tools" will be the special topic of an article in the American Industries Series. This division of the series is to conclude with an account of the steel-manufacture. In the tariff discussions of recent years, sisal has been one of the articles most frequently mentioned. How it is produced and what it looks like may be learned from the illustrated article on "Cultivation of Sisal in the Bahamas," by Dr. John I. Northrop. One of several articles announced for the same number of the *Popular Science Monthly* is an explanation of Dr. Koch's method of treating consumption, by Dr. G. A. Heron, a London physician, and a friend of the discoverer. An explanation of the real nature of Voodoo, traces of which are found among the negroes in our Southern States, with a description of the strange and wild ceremonies connected with it, will also appear in this number. The writer, Hon. Major A. B. Ellis, is an officer in the British Army.

— "Bibliotheca Polytechnica," a directory of technical literature, is a classified catalogue of all books, annuals, and journals published in America, England, France, and Germany, including their relation to legislation, hygiene, and daily life. It is edited by Fritz von Szczepanski. The first annual issue of this new international index to the progress of technical science has appeared

Publications received at Editor's Office,  
Jan. 19-31.

- BARDEEN, C. W. Effect of the College Preparatory High School upon Attendance and Scholarship in the Lower Grades. Syracuse, N. Y., Bardeen. 5 p. 8°.
- BIRNBAUM, Max, Prof. Koch's Method to cure Tuberculosis popularly treated by. Tr. by Dr. Fr. Bredecke. Milwaukee, Wis., H. A. Haferkorn. 106 p. 12°.
- BROOKLYN Daily Eagle Almanac, 1891. Brooklyn, Daily Eagle Pr. 296 p. 8°. 25 cents.
- GRAHAM, W. Socialism New and Old. New York, Appleton. 416 p. 12°.
- HARRIS, W. T. Hegel's Logic. Chicago, Griggs. 403 p. 16°. \$1.50.
- HEWITT, W. Elementary Science Lessons. Standard I. London and New York, Longmans, Green, & Co. 115 p. 16°. 50 cents.
- HEYDENFELDT, S., Jr. The Union of the Conscious Force. New York, J. J. Little, Pr. 105 p. 8°.
- HOOGWERFF, J. A. Magnetic Observations at the United States Naval Observatory, 1888 and 1889. Washington, Government. 100 p. 4°.
- INGERSOLL, R. G. Liberty in Literature. Testimonial to Walt Whitman. New York, Truth Seeker Co. 77 p. 12°. 50 cents.
- LEFFMANN, H., and BEAM, W. Examination of Water for Sanitary and Technical Purposes. 2d ed. Philadelphia, Blakiston. 130 p. 12°.
- LODGE, G., ed. Plato Gorgias. Boston, Ginn. 308 p. 12°. \$1.75.
- MARINE Biological Laboratory of Wood's Holl, Biological Lectures delivered at the, in the Summer Session of 1890. Boston, Ginn. 250 p. 12°.
- MAXWELL, W. H. Examinations as Tests for Promotion. Syracuse, N. Y., Bardeen. 11 p. 8°.
- MICHIGAN, Laws of the State of, relating to the Public Health, in Force in the Year 1890. Lansing, State. 175 p. 8°.
- MISSOURI, Biennial Message of Gov. David R. Francis to the Thirty-sixth General Assembly of the State of. Jefferson City, State. 42 p. 8°.
- NEW YORK Institution for the Blind. Fifty-fifth Annual Report of the Managers of the, for the Year ending Sept. 30, 1890. Albany, State. 77 p. 8°.
- PENNSYLVANIA Oral School for the Deaf, Scranton, Fifth Report of the, for the Years 1888-89, 1889-90. Scranton, F. F. Schoen, pr. 27 p. 8°.
- ROSE, G. H. Text-Book of Hygiene. 2d ed. Philadelphia and London, F. A. Davis. 421 p. 8°. \$2.50.
- SABIN, H. Organization and System vs. Originality and Individuality on the Part of Teacher and Pupil. Syracuse, N. Y., Bardeen. 9 p. 8°.
- SCRIBNER'S MAGAZINE, Comics from. New York, Scribner. 8°. 10 cents.
- SOLDAN, F. L. Tiedemann's Record of Infant-Life. Syracuse, N. Y., Bardeen. 46 p. 16°.

TERRY, J. Sculptured Anthropoid Ape Heads. New York, Amer. Mus. Nat. Hist. 15 p. 4°.

THOMPSON, S. P. Lectures on the Electromagnet. New York, W. J. Johnston Co. 287 p. 12°.

U. S. GEOLOGICAL SURVEY. Topographical Map of the United States. Washington, Government. 9 sheets. 4°.

— Topographical Maps of Portions of New Jersey, Pennsylvania, Delaware, Maine, New Hampshire, Wisconsin. Washington, Government. 12 maps. 4°.

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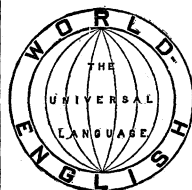
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—We learn from the *Journal of Economics* that a new serial publication devoted to economic discussion is about to appear in England as the organ of the newly founded British Economic Association. The association was organized in November last, with Mr. Goschen as president, and other men of eminence in the economic world in the other offices. The aim of the association is to promote economic study and discussion by all the means usually employed by such societies, but more particularly through the medium of the new journal, the first number of which will appear in March. It will not be the mouthpiece of any one school, but will welcome contributions from any writer who is master of his subject. In view of the prominence of English writers in the development of economic science, it is a little strange that such a movement has not been made by them before; but, now that it has been started, it can hardly fail to be important. There is also to be another periodical issued in England, called the *Economic Review*, which will deal with economic subjects in their moral and social aspects, and which will number among its contributors both English and American writers. The appearance of the new journals will be awaited with interest.

—In October last appeared the first number of the *International Journal of Ethics*, published in Philadelphia and London, and edited by a committee consisting of Americans,

Englishmen, and Germans. It is the successor of the *Ethical Record*, which was an organ of the ethical societies; but the new magazine is of a broader character, and devoted to the discussion of all ethical subjects, both theoretical and practical, without being an organ of any movement or opinion whatever. The first number was of a high order, the papers by Messrs. Sidgwick, Adler, and Höffding being especially suggestive, and the whole magazine giving excellent promise for the future. The January issue, however, is not so good, and contains some of those superficial and half-digested essays which are nowadays all too common. It opens with a well-considered article by Professor D. G. Ritchie, on "The Rights of Minorities," in which the writer maintains that the essential right of minorities is that of freely inculcating their views so as to persuade other people to adopt them, thus converting the minority into a majority. Next follows a review of Professor James's "Psychology," by Josiah Royce; an article on "The Inner Life in Relation to Morality," by J. H. Muirhead; and others on "Moral Theory and Practice," by John Dewey, and on "Morals in History," by Fr. Jodl; but none of these can be said to carry much weight. "The Ethics of Doubt," by W. L. Sheldon, is a thoughtful paper on Cardinal Newman, and some of the lessons of his life and career. Mr. F. H. Giddings has a brief article on "The Ethics of Socialism," and there is an interesting account by Mrs. M. McCallum of the ethical societies of Great Britain. On the whole, there is promise of much good in the new journal; but its conductors must maintain a high standard, and require thorough workmanship on the part of their contributors, if it is to hold the place that it ought to hold in the periodical literature of the time. The journal is published at 1602 Chestnut Street, Philadelphia, at two dollars a year.

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